



2nd Stakeholder Meeting for the development of a Clean Up Plan (Implementation Plan) for the South Fork Holston River Watershed

April 26, 2023

DEQ Southwest Regional Office

Stephanie Kreps

TMDL Nonpoint Source Coordinator

Virginia Department of Environmental Quality

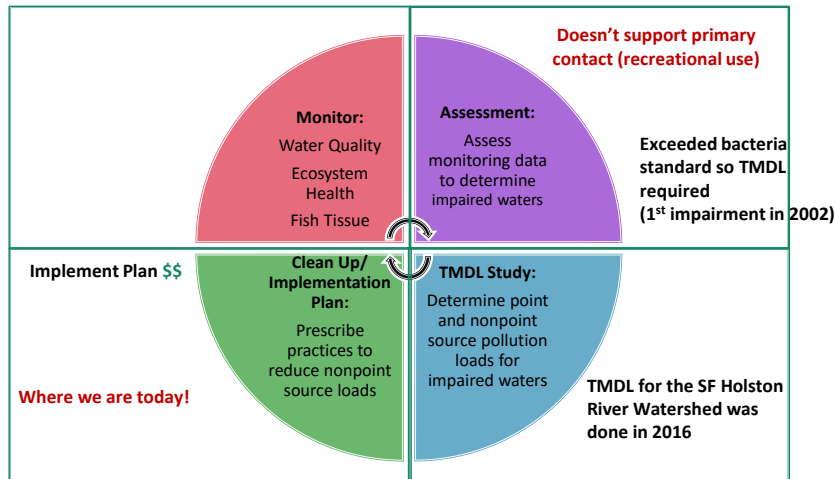
Introductions

What do we hope to accomplish today?

- Remind us where we are in the process
- Discuss proposed BMPs, costs, timeline and priority areas to reduce bacteria in the watershed
 - Residential septic/pet waste
 - Agriculture
- Next steps

DEQ

Virginia's Water Quality Process



DEQ

Assessment: The Clean Water Act (CWA) that became law in 1972 requires that all U.S. streams, rivers, and lakes meet certain water quality standards. The CWA also requires that states conduct monitoring to identify waters that are polluted or do not otherwise meet standards. Through this required program, the state of Virginia has found that many stream segments do not meet state water quality standards for protection of the six beneficial uses:

- 1- recreation/swimming (boating/swimming)
- 2- aquatic life
- 3- wildlife
- 4- fish consumption
- 5- shellfish consumption
- 6- public water supply (drinking)

TMDL Study: Maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. When streams fail to meet standards, the stream is "listed" in the current Section 303(d) report as requiring a Total Maximum Daily Load (TMDL). Section 303(d) of the CWA and the U.S. Environmental Protection Agency's (EPA) Water Quality Management and Planning Regulation (40 CFR Part 130) both require that states develop a Total Maximum Daily Load (TMDL) for each pollutant.

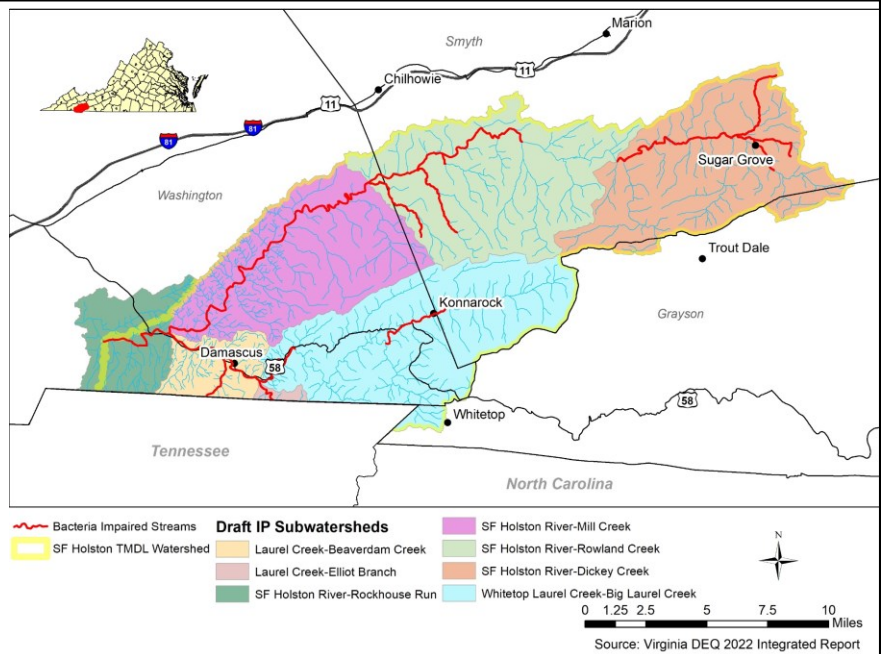
Load allocation= nonpoint sources

Waste load allocation= point sources

Clean Up/IP: Once a TMDL is developed and approved by EPA, measures must be taken to reduce pollution levels in the stream. Virginia's 1997 Water Quality Monitoring, Information and Restoration Act (WQMIRA) states in section 62.1-44.19:7 that the "Board shall develop and implement a plan to achieve fully supporting status for impaired waters". The Implementation Plan (IP) describes control measures, which can include the installation of best management practices (BMPs), which should be implemented in a staged process. Through this process, states establish water-quality based controls to reduce pollution and meet water quality standards.

Impaired stream segments

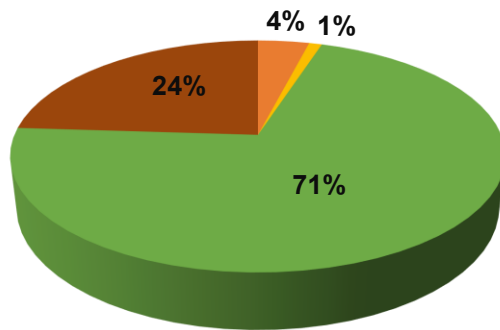
Impaired Streams	Initial Listing Year
Slemp Creek	2010
Cressy Creek	2022*
SF Holston	2010
SF Holston	2002
Saint Clair Creek	2016*
Bishop Branch	2010
Grosses Creek	2010
Whitetop Laurel	2012
SF Holston	2006
SF Holston	2004
Laurel Creek	2022*
Beaverdam Creek	2022*



12 impaired segments within the SF Holston watershed

* New impaired segments since the TMDL was completed in 2016

From the TMDL study: **Bacteria Source Assessment**



- Humans (straight pipes and failing septic systems): 4%
- Pets: 1%
- Agriculture (pasture/hay, livestock access): 71%
- Wildlife: 24%

DEQ

Not addressing wildlife in the Implementation Plan

Residential Septic: BMPs

1. Number of straight pipes- reduced to 1%
2. Updated totals in Laurel Creek to only include VA:

Sub-watershed	Unsewered houses	Estimated failing septic systems	Estimated straight pipes
Laurel Creek – Beaverdam Creek	357	11	4
Laurel Creek – Elliot Branch	0	0	0
SF Holston River – Rockhouse Run	175	6	2
SF Holston River – Mill Creek	934	30	9
SF Holston River – Rowland Creek	2,215	70	22
SF Holston River – Dickey Creek	758	24	8
Whitetop Laurel Creek – Big Laurel Creek	621	20	6
Total	5,060	161	51

Is this more realistic?

DEQ

Laurel Creek- Beaverdam Creek used to have 1,060 unsewered, 32 failing systems, 11 straight pipes

Residential Septic: BMPs

3. More replacements (80%) than repairs (20%)
4. More Conventional (60%) than Alternative (40%) systems needed
5. 50% repairs would not require a permit
6. Third of households would do septic pumpout
7. Total repairs and replacements (within VA portion only):

BMP (Cost-share codes in parentheses)	Units	Extent
Onsite sewage system repair w/ permit (RB-3)	Repair	16
Full inspection and non-permitted onsite sewage system repair (RB-3M)	Repair	16
Onsite sewage system installation/replacement (RB-4)	System	54
Onsite sewage system installation/replacement w/ pump (RB-4P)	System	54
Alternative sewage system (RB-5)	System	72
Septic tank pump-out (RB-1)	Pump-out	1,668

Is this
reasonable?

DEQ

Residential Septic: Costs

8. Overall implementation costs:

Reasonable?

Practice	Cost-share code	Units	Unit cost	Number of Units	Total
Septic tank pump-out	RB-1	system	\$400	1,668	\$667,200
Septic tank system repair	RB-3	repair	\$5,000	16	\$80,000
Septic system inspection and non-permitted repairs	RB-3M	repair	\$3,000*	16	\$48,000
Septic tank system installation or replacement	RB-4	system	\$8,000	54	\$432,000
Septic tank system installation/replacement w/ pump	RB-4P	system	\$12,000	54	\$648,000
Alternative waste treatment system	RB-5	system	\$24,000	72	\$1,728,000
TOTAL ESTIMATED COST					\$3,663,200

* Estimated cost/unit varies between \$2,000 - \$4,000 depending on lifespan

DEQ

Residential Septic: Timeline

Focus on Stage 1 since that gets us to the Delisting Goal

9. Staged implementation goals: **How long is each stage?**

Description	BMP code	Units	50%	50%	Total
			Stage 1	Stage 2	
Onsite sewage system repair w/ permit	RB-3	repair	8	8	16
Full inspection and non-permitted onsite sewage system repair	RB-3M		8	8	16
Onsite sewage system installation/replacement	RB-4	system	27	27	54
Onsite sewage system installation/replacement w/ pump	RB-4P		27	27	54
Alternative sewage system	RB-5		36	36	72
Septic tank pump-out	RB-1	pump-out	834	834	1,668

DEQ

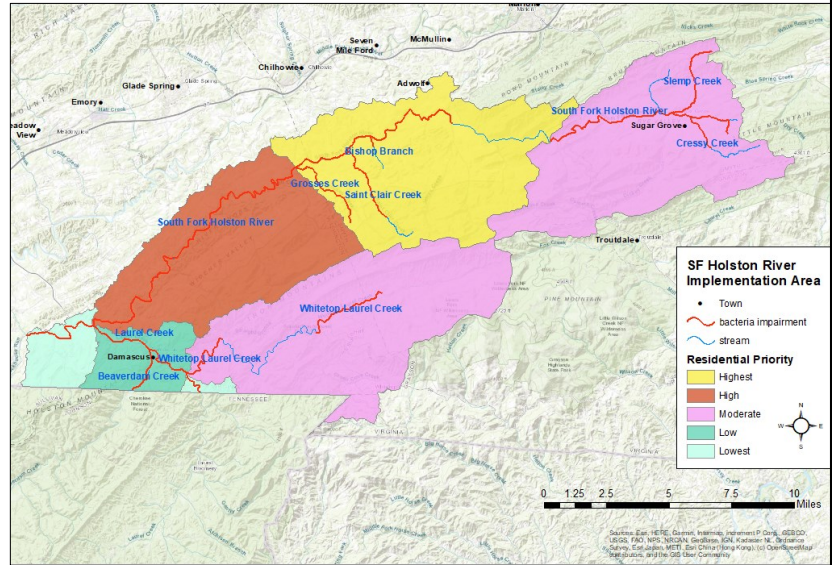
9. How many years needed to implement Stage 1 and Stage 2? Current Stage 1 will get us to the delisting goal (based on monitoring data) vs Stage 2 which gets us to the TMDL goal (based on modeling). Other IPs have 1-5yrs or 1-10yrs (Stage 1) and 1-5 yrs or 1-10yrs (Stage 2)= 10-20 years.

- Based on 50:50 of #BMPs per stage. Would you prefer to see more practices done sooner (so more in Stage 1)? Is that realistic?

Residential Septic: Priority Areas

10. Priority areas
based on 'need':

Where there are the
most failing septic
systems



10. In the last meeting, it was mentioned to focus in the Damascus/Sugar Grove areas first but to get at water quality improvements sooner, these are the priority areas that will address the bacteria load quickest/first. Thoughts?

Pet Waste: BMPs

11. Total BMPs, with focus on Damascus area and Virginia Creeper Trail:

BMP (Cost-share codes in parentheses)	Units	Extent
Pet waste disposal station (PW-1)	Station	3
Wastewater treatment system for confined canine facilities (PW-3)	System	2
Pet waste education program	Program	1

Is this
reasonable?

Need more than 1
Education program?

Pet Waste: Costs

12. Overall implementation costs:

Reasonable?

Practice	Cost-share code	Units	Unit cost	Number of Units	Total
Pet waste disposal station	PW-1	station	\$2,000	3	\$6,000
Large scale pet waste treatment system	PW-3	system	\$10,000	2	\$20,000
Pet waste education program	N/A	program	\$4,000	1	\$4,000
TOTAL ESTIMATED COST					\$30,000

DEQ

Pet Waste: Timeline

Focus on Stage 1 since that gets us to the Delisting Goal

13. Staged implementation goals: **How long is each stage?**

Description	BMP code	Units	50%	50%	Total
			Stage 1	Stage 2	
Pet waste disposal station	PW-1	station	2	1	3
Large scale pet waste treatment system	PW-3	system	1	1	2
Pet waste education program	N/A	program	1	0	1

DEQ

13. How many years needed to implement Stage 1 and Stage 2? Current Stage 1 will get us to the delisting goal (based on monitoring data) vs Stage 2 which gets us to the TMDL goal (based on modeling)

- Based on 50:50 of #BMPs per stage. Would you prefer to see more practices done sooner (so more in Stage 1)? Is that realistic?

Agriculture: BMPs

Focus on Stage 1 since that gets us to the Delisting Goal

14. 50:50 for Stage 1 and 2 meets delisting goal

15. Fencing needs (includes what's been done since TMDL done in 2016):

Sub-watershed	Estimated total length of streambank in pasture/hay (feet)	Approximate fencing installed to date (feet)	50% 50% Fencing still needed	
			Stage 1 (feet)	Stage 2 (feet)
Laurel Creek – Beaverdam Creek	65,998	22,000	20,585	20,147
Laurel Creek – Elliot Branch	0	0	0	0
SF Holston River – Rockhouse Run	106,822	34,670	33,673	33,397
SF Holston River – Mill Creek	360,011	216,435	63,771	69,265
SF Holston River – Rowland Creek	201,605	97,900	44,863	51,070
SF Holston River – Dickey Creek	194,991	0	91,646	89,696
Whitetop Laurel Creek – Big Laurel Creek	37,202	2,100	16,498	16,147
Total	966,629	373,305 (39%)	271,036 (28%)	279,722 (29%)

Is this reasonable?

DEQ

50:50 for Stage 1 and 2

Agriculture: BMPs & Timeline

Focus on Stage 1 since that gets us to the Delisting Goal

16. Estimated 90% of fencing using wide buffers; 10% narrow buffers

17. Exclusion fencing needed to reduce bacteria from direct deposition:

Sub-watershed	Fencing needed	SL-6N or WP-2N (10 – 25 ft buffer): 10%		SL-6W, WP-2W or CRSL-6 (35 – 50 ft buffer): 90%	
	feet	feet	systems	feet	systems
Stage 1					
Laurel Creek – Beaverdam Creek	20,585	2,059	1	18,526	12
Laurel Creek – Elliot Branch	0	0	0	0	0
SF Holston River – Rockhouse Run	33,673	3,367	2	30,306	20
SF Holston River – Mill Creek	63,771	6,377	4	57,394	38
SF Holston River – Rowland Creek	44,863	4,486	3	40,377	27
SF Holston River – Dickey Creek	91,646	9,165	6	82,481	55
Whitetop Laurel Creek – Big Laurel Creek	16,498	1,650	1	14,848	10
Total Stage 1	271,036	27,104	17	243,932	162
Stage 2					
Laurel Creek – Beaverdam Creek	20,147	2,015	1	18,132	12
Laurel Creek – Elliot Branch	0	0	0	0	0
SF Holston River – Rockhouse Run	33,397	3,340	2	30,057	20
SF Holston River – Mill Creek	69,265	6,926	5	62,339	42
SF Holston River – Rowland Creek	51,070	5,107	3	45,963	31
SF Holston River – Dickey Creek	89,696	8,970	6	80,726	54
Whitetop Laurel Creek – Big Laurel Creek	16,147	1,615	1	14,532	10
Total Stage 2	279,722	27,973	18	251,749	169
Total	550,758	55,077	35	495,681	331

Are these estimates reasonable?

How long is each stage?

DEQ

These are the practices that need to be done. Is this reasonable?

How long would each stage need to be to complete BMPs?

Agriculture: BMPs & Timeline

Focus on Stage 1 since that gets us to the Delisting Goal

18. Land based BMPs needed to reduce bacteria from pasture and cropland:

BMP (Cost-share codes in parentheses)	Stage 1	Stage 2	Total	Are these estimates reasonable?	
	Acres				
Extension of watering system (SL-7)	1,383	1,383	2,766		
Improved pasture management (SL-10)	19,149	2,766	21,915		
Afforestation of crop, hay and pasture land (FR-1)	0	6,371	6,371		
Permanent vegetative cover on critical areas (SL-11)	0	64	64		
Cover crop (SL-8B, SL-8H)	31	30	61		
Animal waste control facility (WP-4, WP-4B, WP-4FP, WP-4LL, WP-4SF)	1	7	8		How long is each stage?
Roof runoff management (WQ-12)	0	2	2		
Water control structure (WP-1) – acres treated	0	8,766	8,766		

DEQ

These are the practices that need to be done. Is this reasonable?

How long would each stage need to be to complete BMPs?

Will need to look into Continuing Conservation Initiative (CCI) practices and whether or not could be funded by 319(h).

Agriculture: Costs

19. Overall implementation costs:

Reasonable?

Practice	Cost-share code	Units	Unit cost	Number of Units	Total
Stream exclusion with narrow width buffer and grazing land management	SL-6N	system	\$40,000	18	\$720,000
Stream exclusion with wide width buffer and grazing land management	SL-6W, CRSL-6	system	\$50,000	166	\$8,300,000
Stream protection fencing with narrow width buffer	WP-2N	system	\$10,000	17	\$170,000
Stream protection fencing with wide width buffer	WP-2W	system	\$10,000	165	\$1,650,000
Exclusion fence maintenance (10 yrs)	N/A	feet	\$3.25	275,379	\$894,982
Extension of watering system	SL-7	acres	\$250	2,766	\$691,500
Improved pasture management	SL-10	acres	\$75	21,915	\$1,643,625
Critical area stabilization	SL-11	acres	\$1,800	64	\$115,200
Afforestation of crop, hay and pasture land	FR-1	acres	\$500	6,371	\$3,185,500
Cover crop	SL-8B, SL-8H	acres	\$80	61	\$4,880
Animal waste control facility	WP-4, WP-4B, WP-4FP, WP-4LL, WP-4SF	system	\$100,000	8	\$800,000
Roof runoff management	WQ-12	system	\$1,450	2	\$2,900
Water control structure	WP-1	acres-treated	\$150	8,766	\$1,314,900
TOTAL ESTIMATED COST					\$19,493,487

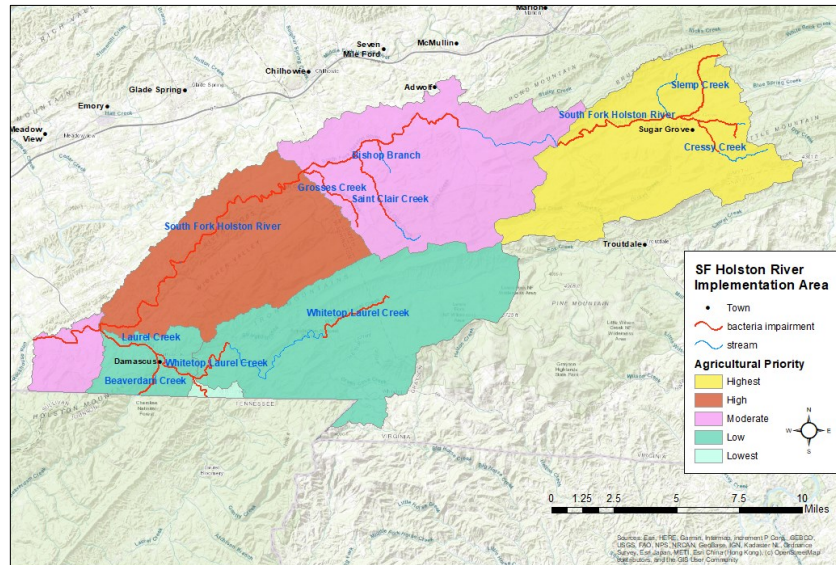
DEQ

Used cost sheets provided by Holston River SWCD and Evergreen SWCD

Agriculture: Priority Areas

20. Priority areas based on 'need':

Where there are high bacteria loads, high agriculture practices and impaired segments



Technical Assistance

- 21. One (1) full-time employee (FTE) for each SWCD for Ag BMPs?
- 22. One (1) full-time employee (FTE) for each SWCD for Residential Septic/Pet Waste BMPs?

DEQ

Overall Summary

23. Total BMP implementation costs by stage:

BMP Application	Cost by Stage		Total
	Stage 1 (Years 1–5)	Stage 2 (Years 6–10)	
Agricultural	\$7,624,839	\$11,868,648	\$19,493,487
Residential	\$1,819,600	\$1,813,600	\$3,633,200
TOTAL ESTIMATED COST	\$9,444,439	\$13,682,248	\$23,126,687

DEQ

Next Steps

	Tentative Date
First Public Meeting	November 10, 2022 (Public comment period November 10- December 12, 2022)
Stakeholder Meetings	
# 1	January 25, 2023
# 2	April 26, 2023
Final Public Meeting	May 2023- date? (Public comment period 30 days after Final Public Meeting)
EPA Approval	June/July 2023? Available for DEQ 319 funded projects in 2024?

DEQ

Final public meeting will focus on draft IP– any other feedback on what is being proposed?

**Any other thoughts or
questions, contact me!**

Stephanie Kreps
VDEQ – Southwest Regional Office
stephanie.kreps@deq.virginia.gov
(276) 608-8811



DEQ